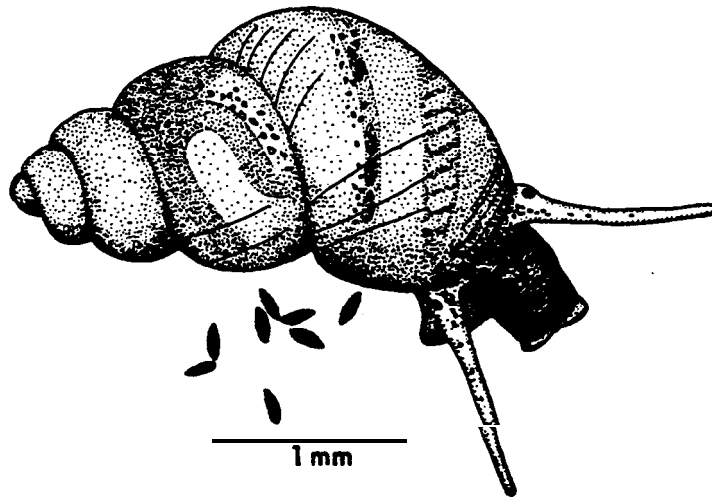


# **SOCORRO AND ALAMOSA SPRINGSNAIL RECOVERY PLAN**



**U.S. Fish and Wildlife Service  
New Mexico Ecological Services State Office  
Albuquerque, New Mexico  
August 1994**

ALAMOSA SPRINGSNAIL (Trvonia alamosae)

AND

SOCORRO SPRINGSNAIL (Pyrgulopsis neomexicana)

RECOVERY PLAN

Prepared by

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and

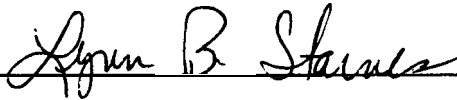
Bernadine Metzinger

U.S. Fish and Wildlife Service

New Mexico Ecological Services State Office

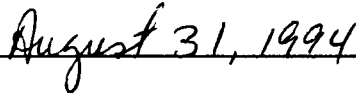
Albuquerque, New Mexico

Approved: \_\_\_\_\_



Regional Director, U.S. Fish and Wildlife Service

Date: \_\_\_\_\_



#### DISCLAIMER

Recovery plans delineate reasonable actions that the U.S. Fish and Wildlife Service (Service) believes are required to recover and/or protect listed species. The plans, published by the Service, are sometimes prepared with the assistance of recovery teams, contractors, State agencies, and others. The Service will attain recovery objectives and make available necessary funds to do so, subject to budgetary and other constraints affecting the parties involved, and the need to address other priorities. Recovery plans do not necessarily represent the views nor the official positions or approval of any individuals or agencies involved in the plan formulation, other than the Service. They represent the official position of the Service only after they have been signed by the Regional Director or Director as approved. Approved recovery plans may be modified subject to new findings, changes in species' status, or the completion of recovery tasks.

This plan assumes that 1) at least two additional spring sources can be located within the presumed historic range of these two species, i.e., basin drainage, 2) each spring system, and associated terrestrial habitat, would contain the chemical, biological, and ecological features required to sustain the species through time, and 3) the introduction sites must be located at a sufficient distance from current populations to minimize the probability the replicate populations would also be destroyed in the event of a disaster that would threaten the continued existence of either or both species. In the event that recovery must be limited to known historic sites, a commitment to long-term management will be required. Should such restrictions be applied, it is doubtful that delisting will occur in the foreseeable future.

#### LITERATURE CITATIONS

Literature Citations should read as follows:

U.S. Fish and Wildlife Service. 1993. Alamosa Springsnail (Trvonia alamosae) and Socorro Springsnail (Pyrgulopsis neomexicana) Draft Recovery Plan. Albuquerque, New Mexico. 24 pp.

Additional copies may be purchased from:

Fish and Wildlife Reference Service:

5430 Grosvenor Lane, Suite 110  
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The fee for the Plan varies depending on the number of pages in the Plan.

EXECUTIVE SUMMARY FOR THE **ALAMOSA SPRINGSNAIL** AND **SOCORRO SPRINGSNAIL**  
DRAFT RECOVERY PLAN

Current Status: Both of these species are listed as endangered. Only one population of each species is known to exist. These populations survive in isolated thermal springs on private property in Socorro County, New Mexico. The Alamosa springsnail survives in five individual thermal springheads, and associated springruns that flow together and discharge into Alamosa Creek. These five springheads are all located within 1/2 mile of each other and may receive water from the same underground source. The Alamosa springsnails are assumed to be one population. The Socorro springsnail survives in one small thermal spring. Little is known about either species' life history, population density, population fluctuations, or interactions with other species of animals and plants.

Habitat Requirements and Limiting Factors: Both springsnails require fresh, flowing, thermally heated water with a temperature of 17 to 28 degrees centigrade to survive. Any activity that would interrupt the flow of water from these springs, lessen the quantity of both the aquatic and terrestrial habitat, or degrade the water quality of the habitats inhabited by these species could threaten their existence.

Recovery Objective: Downlisting/Delisting

Recovery Criteria: Downlist: ensure extant populations and existing habitats are secured from threats. Delist: when at least one additional population in other spring systems is established for each species. Each additional population must be maintained for a minimum of 5 consecutive years before it will be considered successful.

Actions Needed:

1. Work with landowners to develop a Habitat Management Plan for protection of springsnails' habitats.
2. Monitor and evaluate the existing populations and their habitat twice annually.
3. Determine life history and ecological needs.
4. Locate site and establish second populations of each species in presumed historic habitat, but disjunct from existing populations.

**Estimated Cost of Recovery:** Partial costs are estimated for a subset of the tasks/needs for the first ten fiscal years, each of which begins on October 1.

costs: (\$000'9)	<u>Year</u>	<u>Need 1</u>	<u>Need 2</u>	<u>Need 3</u>	<u>Need 4</u>	<u>Total</u>
	1994	6.0	5.0	10.0	11.0	32.0
	1995	6.0	2.0	6.0	3.0	11.0
	1996	6.0	2.0	10.0	2.0	14.0
	1997	.0	2.0	10.0	2.0	4.0
	1998	.0	2.0	.0	2.0	4.0
	1999	.0	2.0	.0	2.0	4.0
	2000	.0	2.0	.0	2.0	4.0
	2001	.0	2.0	.0	2.0	4.0
	2002	.0	2.0	.0	2.0	4.0
	<u>2003</u>	<u>.0</u>	<u>2.0</u>	<u>.0</u>	<u>2.0</u>	<u>4.0</u>
	Total	18.0	23.0	36.0	30.0	101.0

**Date of Recovery:** Current requirements for downlisting could be met by 1996, and delisting could take place by 2003. (This assumes additional populations will be found in other springs).

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## I. INTRODUCTION

### Legal Status and Recovery Priority

The State of New Mexico listed the Alamosa and Socorro springsnails (springsnails) as endangered, group 2, on March 28, 1985 (Section 17-2-37 through 17-2-46 NMSA 1978). On October 30, 1991, the U.S. Fish and Wildlife Service (Service) also listed both species as endangered under the Endangered Species Act of 1973 (Act), as amended (Service 1991).

Critical habitat for springsnails has not been proposed. The Service believes divulging the location of springs where springsnails are found would not be prudent; rather, such action could increase the risk of vandalism and further jeopardize the continued existence of both species.

Constituent habitat elements important to continued survival of these species require a continued supply of free-flowing thermal spring water free of pollutants bordered by a zone of organic detritus and vegetation sufficient to support each species' biological and habitat requirements.

The recovery priority for these species is 14, indicating they: 1) are taxonomically distinct; 2) face a low degree of threat; and 3) have high recovery potential.

### Description

#### Socorro Springsnail

The Socorro springsnail (Pyrgulopsis neomexicana) was described originally from warm springs in Socorro, New Mexico. The collector and date of the unique first sample are unknown (Taylor 1983). Specimens came from the C. M. Wheatley collection and were likely collected in the 19th century (Taylor, San Francisco State University, in litt., 1980). The species was formally described and named Amnicola neomexicana by Pilsbry (1916). In 1982, Burch reclassified it as Fontelicella neomexicana. Hershler and Thompson (1987) assigned members of the genus Fontelicella, including F. neomexicana, to the genus Pyrgulopsis.

The Socorro springsnail has an elongate-ovate conical shell that is light tan, short-spined, and up to 2.5 millimeters (mm) (0.1 inch) in length (New Mexico Department of Game and Fish (NMDGF) 1985). Females are larger than males. The male penis has a long glandular strip on the terminal lobe, a long penial gland, and three shorter dorsal glandular strips (Taylor 1987). Body and head are dark gray to black. Internal callus is reddish brown to amber, and the operculum is pale. Tentacles range from black or dark gray at base to pale gray at tips (Taylor 1987).

## Alamosa Springsnail

The Alamosa springsnail (Trvonia alamosae) was first discovered by Taylor in 1979, and placed in the genus Trvonia. The species was described as Trvonia alamosae in 1987 (Taylor 1987).

Distinguishing features of the Alamosa springsnail include a conical shell that is up to 3 mm (0.1 inch) long, with well-impressed sutures separating regularly convex whorls. The male penis is a flattened blade with a conical glandular papilla on the left side towards the tip (Taylor 1983). Body color varies from opaque black to gray. The species exhibits distinct sexual dimorphism with females having a longer shell (1.41 mm for males and 2.30 for females) (Taylor 1987). Male shells have 3½-4 whorls and the female 4-5½ whorls. In living animals, the thin shell is translucent and permits observation of some internal structures (Taylor 1987).

### Historic and Present Distribution

#### Socorro Springsnail

The original specimen of the Socorro springsnail reportedly came from a thermal spring near Socorro, New Mexico. The species is now extinct at the type locality, but the date and cause of the extinction are uncertain (Taylor 1987). The species has been reported from other springs in Socorro County (Landye 1981), although there is disagreement on whether the species historically occurred there (Taylor 1987). Currently, the Socorro springsnail is known from only one spring in Socorro County, New Mexico, where it was located in 1979.

#### Alamosa Springsnail

The Alamosa springsnail is endemic to central New Mexico. The species is known only from a thermal spring complex in Socorro County, New Mexico (Figure 1). The spring complex consists of five individual springheads that flow together. The species also occurs in minor rivulets out of the main channel in the canyon where the springs arise (Taylor 1987).

### Habitat Description

#### Socorro Springsnail

The principal spring source where the Socorro springsnail is currently found has been impounded, which reduced the flowing-water habitat to a very small pool. One tiny spring source having a small improved pool (less than 1 m<sup>2</sup> in area), with water temperature of 17 degrees centigrade remains. The species is abundant on rootlets in this pool, but is not found in the ditches and ponds radiating from the spring into irrigation structures. Other mollusks found in the vicinity include Phvsa mexicana, Lvmnaea modicella, and Pisidium casertanum. In 1981, the colony of Socorro



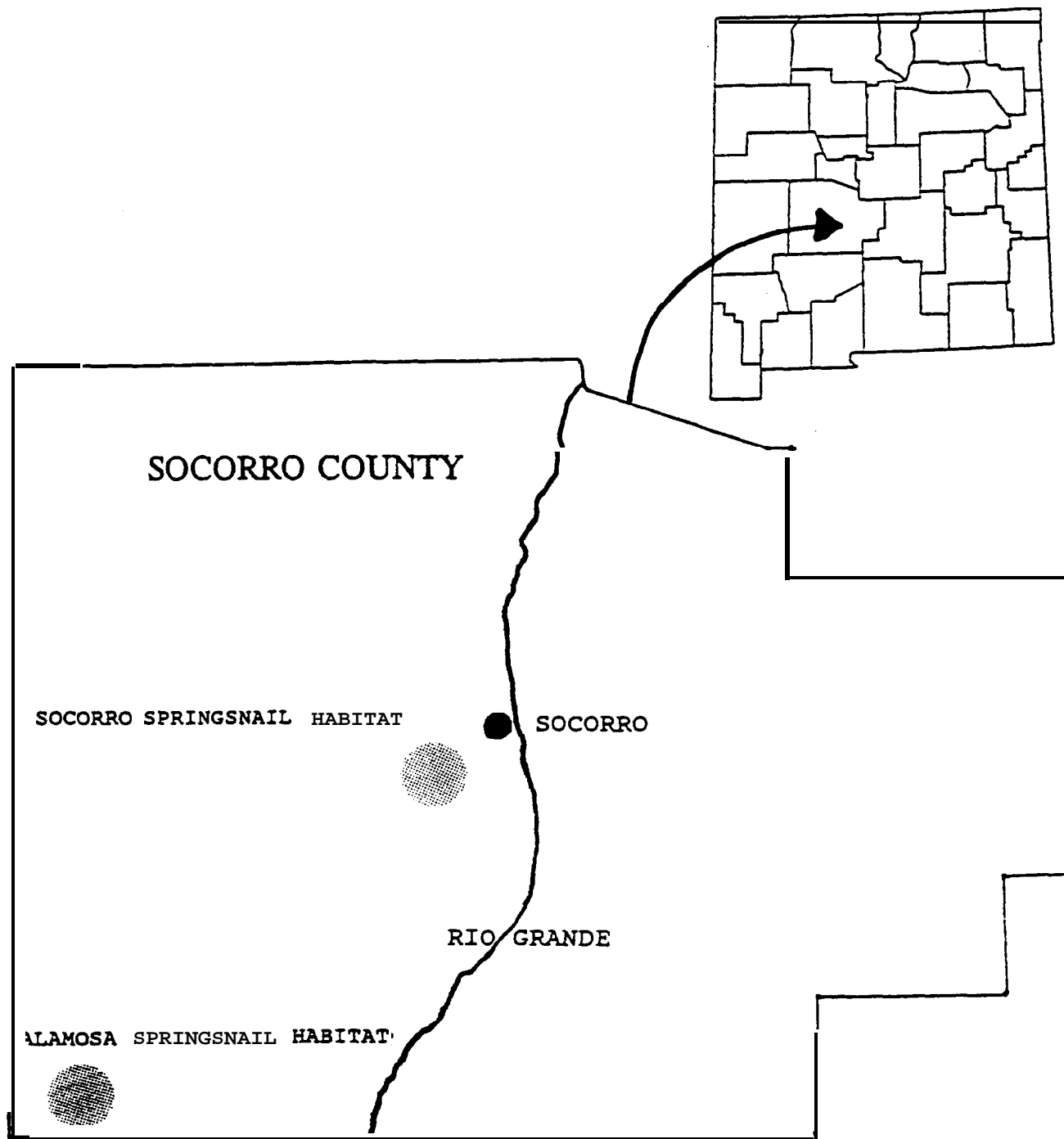


Figure 1. General locations for the Socorro and Alamosa Springsnails

springsnails was found to occupy not only the source but also the outflow tributary about 2.5 meters (8 feet) long to an irrigation ditch. No snails were found in the irrigation flow. At the time of listing, the total population of the Socorro springsnail in the spring outflow was estimated at 5,000 individuals.

#### Alamosa Springsnail

The site where the Alamosa springsnail is found consists of five distinct springheads. The largest of the five springheads, and the most distinctive, is the only one identified by the U.S. Geological Survey (USGS); the other four are unnamed and are located about 1/2 mile west. These four springheads maybe physically connected to each other, and receive water from the same source. A low ridge separates the largest spring from these springs, For the purposes of this recovery plan however, the term springs refers to the five springs as an aggregate spring complex (Figure 1).

The Alamosa springsnail is found mainly in situations where minor rivulets flow out of the main channel downstream of the springhead (Taylor 1987). In these situations, there is a mat of watercress and filamentous green algae over water 1-2 inches deep flowing over fine gravel and sand among rhyolitic cobbles and rocks (Taylor 1987). The species is found in slow current on gravel and among vegetation, and is most abundant where an organic film covers the pebbles and cobbles. As spring runs join and form a narrow, swifter, flowing brook, snails become less numerous.

Water temperature at the springheads remains between 27-28°C degrees (Taylor 1987). While flow measurements have never been conducted from the five springheads, it does not appear that seasonal fluctuation in water flow or water temperature occur. Records taken from a USGS stream gage, located on the north bank of the Alamosa River, immediately downstream where the Alamosa springsnail spring complex discharges into the Alamosa River, have been collected and maintained for approximately 23 years. The best estimate of the water flows from the spring complex can be extrapolated by examining these gage records. During dry periods, the springs are major suppliers of water past this gage; therefore, it can be assumed that during these periods the gage reading represents actual flow from the five springheads. These records show an average annual discharge of 8.27 cubic feet per second (cfs), which is approximately the base flow of the spring system (USGS 1971). The lowest flow recorded at the site occurred in 1969 when 5.0 cfs was recorded. Peak discharge at the site occurred on August 13, 1964, when the flow reached 10,800 cfs. This peak discharge represents an extreme localized *summer* storm event which, at its peak, could have caused water from the river to back up into some of the habitats occupied by the Alamosa springsnail.

### Ecology and Life History

Few studies have been conducted on the biology of the Alamosa and Socorro springsnails. Both species are gilled and totally aquatic, both species occur in slow-velocity water near spring sources in thermal habitat (NMDGF 1985). Both species occur on stones and among aquatic plants. The Socorro springsnail is also found in the uppermost layer of an organic muck substrate. Both species are herbivorous, and feed on algae and other materials that occur in the organic film on plants and debris.

The Socorro springsnail is oviparous, and probably lays its eggs in spring and summer.

The Alamosa springsnail is ovoviviparous, and contains a series of embryos in various stages of development. Because the Alamosa springsnail lives in a thermally constant environment, reproduction is probably not seasonal, and population size likely remains relatively stable (NMDGF 1985).

Mollusks found in association with the Alamosa springsnail include Lymnaea parva and Physa mexicana. It is not known if these other mollusk species compete with the Alamosa springsnail. Other aquatic biota of special concern that are also found in association with the springs include an undescribed leopard frog (Rana sp.) and the narrowhead garter snake (Thamnophis rufiunctatus).

The lowermost of the spring complex for the Alamosa springsnail emits in a marshy area. Taylor (1987) describes this site as the type of habitat most species of Trivona prefer - fine mud at a spring source. However, the Alamosa springsnail is not present at this site, leading Taylor (1987) to speculate that the Alamosa springsnail is specialized for browsing on organic film.

### Threats

The limited ranges of the Socorro and Alamosa springsnails make them vulnerable to habitat loss or alteration. Potential threats to the species include all activities that would significantly reduce spring flow or the food source that supports both springsnail species. Alterations to the watersheds, springs, or associated runs could cause a reduction in water flow, change in water temperature or water quality, modify habitat or food source, thus have a devastating impact on existing populations.

The limited ranges of these species make them vulnerable to loss, should their specialized habitat be altered. The population of the Socorro springsnail is limited to a single pool less than 1 m<sup>2</sup> in area, and an outflow ditch about 2.5 meters (8 feet) in length. Several of the springs that formerly contained the Socorro springsnail have been impounded, eliminating habitat critical for the species' survival. Some degree of security may be provided the Alamosa springsnail because the two spring systems where it occurs are physically separated. However, if the two

systems rely on the same water source, a single disaster could eliminate both populations.

Perhaps the greatest threat facing these species is the potential loss of water flow. Excessive pumping from the aquifer that supplies water to the springs could destroy the springs and the species. Potential pollution of the springs could negatively impact these species and perhaps cause extinction also.

Potential introduction of exotic and non-native fishes or other aquatic organisms pose an additional threat due to potential predation or competition these organisms could exert upon springsnails.

Present land use surrounding the Alamosa springsnail spring complex includes livestock grazing. The current level does not appear to be harmful to Alamosa springsnail habitat.

Because of their rarity, both springsnails are of interest to biologists and collectors. Therefore, collection of animals is a minor but continuing threat. Collecting springsnail specimens for scientific purposes is regulated by the NMDGF. The level of collecting does not appear to adversely impact the springsnails' populations. Collection for scientific purposes should, however, continue to be closely monitored and regulated as appropriate to protect the wild population.

#### Conservation Measures

Because both species are listed as endangered under the provisions of the Act and by the State of New Mexico as endangered, group 2, these springsnails receive protection. Both State and Federal protection statutes control collection of the species, since permits must be obtained from both the Service and NMDGF before specimens can be collected. The Act also provides a degree of protection to the species and their habitat through section 7(a) of the Act, which requires all Federal agencies to evaluate their actions with respect to any species that is listed or proposed for listing as endangered or threatened. Regulations implementing this part of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires that Federal agencies ensure that activities they fund, authorize, or carry out are not likely to jeopardize the continued existence of a listed species. If a Federal action may affect a listed species, the responsible Federal agency must enter into formal consultation with the Service. No ongoing or proposed Federal projects have been identified that may affect either of these two species.

### Recovery Strategy

Because of the extremely limited distribution of the Alamosa and Socorro springsnails, the recovery strategy for these two springsnail species has its foundation in the maintenance of their habitat in perpetuity. While it is possible that additional populations may be established in other springs, this possibility is contingent upon locating springs within the species' presumed historic range that have the physical and biologic attributes, including terrestrial habitat components, that the springsnails require to survive and do not support their own endemic fauna. Downlisting criteria must emphasize expansion of existing populations. Such recovery actions for the Alamosa and Socorro springsnails will require working with the owners of the property where the species occur to ensure that the springs that support them continue to flow and perpetuate the habitat required for their continued survival. Delisting is predicated on locating additional habitat within the basin where the species occur, and successful reintroduction that affords establishment and maintenance of the species.

## II. RECOVERY

### Objectives

The objective of this recovery plan is to outline the tasks that must be accomplished to assure the continued existence of the Alamosa and Socorro springsnails and make it possible to downlist them from endangered status to threatened status. Delisting of the springsnails will be possible if additional populations can be established at other sites.

### Recover-v Criteria

The Socorro and Alamosa springsnails will be considered for downlisting when: (1) a habitat management plan (HMP) is formulated that provides protection of both springsnail species and their habitats; and (2) the HMP has been in place for 5 years and has demonstrated that the continued existence of the Socorro and Alamosa springsnail populations are assured under conditions of the HMP. Delisting will be considered when: (1) protection of the springsnails' habitat in perpetuity can be assured; and (2) additional populations can be successfully established, as evidenced by recruitment and persistence over a period of 5 consecutive years, in habitat that was likely to have been historically occupied by each of the springsnails while the HMP continues to provide protection for the habitat of the original populations.

### Recovery Narrative

1. Develop a HMP. With cooperation of landowners and other interested agencies, groups, or individuals, a HMP should be developed that will provide for the continuation of the Alamosa and Socorro springsnails in their historic habitat. This plan should specifically focus on the historic use of land surrounding the springs and continuation of that use.
  - 1.1 Obtain concurrence from the landowners to develop a HMP. Because all habitat presently occupied by both species of springsnails is located on privately owned land, it is necessary to have the cooperation of landowners in development of a HMP. Without landowner cooperation, an HMP cannot be implemented. Therefore, the Service should contact the landowners and determine their willingness to cooperate with the Service in development of the HMP. Landowners must be assured that management of the springsnails' habitat will not interfere with their private property rights but support maintenance of the springs and their effluent to maintain habitat essential to the long-term survival of both snail species.

- 1.2 Cooperate with other agencies, groups, or individuals in preparation of the HMP. Contingent upon results of 1.1, notify other agencies, groups, or interested individuals of the Service's intent to prepare an HMP and seek their support and/or participation.
  - 1.3 Draft an HMP. With cooperation and assistance of the landowner, and others as appropriate, draft an HMP. This HMP may be initially drafted by the Service and then sent to the landowner and others for review and comment.
  - 1.4 Implement the HMP. It may be possible for the landowner to enter into a partnership agreement with the Service and have all costs associated with implementing the HMP paid by the Service. All options to defray any cost associated with the HMP should be explored.
2. Monitor and evaluate existing populations and their habitat. A monitoring program should be established to determine the health of the populations of the Alamosa and Socorro springsnails and determine the condition of their habitat. To be effective, this program should be initiated with approval of this plan and continue for at least 5 years after recovery has been achieved. Monitoring should be conducted twice annually according to an established protocol.
    - 2.1 Obtain permission from the landowner to conduct the monitoring. For a monitoring program on private land to succeed, permission to conduct the monitoring must be obtained. Terms of the monitoring program should be incorporated in, or appended to, the HMP.
    - 2.2 Establish a monitoring protocol and plan. A monitoring protocol and plan should be developed that includes gathering all information on the species and their habitats. The protocol should include collection of data on type of water body inhabited, size of water body, flow rate in the vicinity of the springsnails, substrate occupied, water temperature, air temperature, Ph, quantitative sample, location of samples, species and number per sample, and water depth at sample sites. In addition, the monitoring protocol and plan should include gathering of data on adjacent terrestrial habitat and on other syntopic species.
    - 2.3 Conduct monitoring. For a monitoring program to succeed, it is necessary to identify an entity responsible for conducting the monitoring and a funding source. Several options exist: the monitoring can be conducted by the NMDGF, by the Service, or by a qualified cooperator.
3. Determine biological and habitat needs for the Alamosa and Socorro springsnails. Meager information exists on the biological and habitat requirements of these two species. This information would be extremely

valuable in advising landowners on land management practices that would maintain the species in perpetuity.

- 3.1 Prepare a study/research plan. Research proposals can be solicited from independent researchers, universities, or other State and Federal agencies. Funding priority should be based on the anticipated contribution of each project to the recovery of the species.
  - 3.2 Conduct studies and research in both the field and laboratory. To obtain life history and ecological information on these two species, it will be necessary to conduct both on-site studies and laboratory research. The purpose of these studies and research should be to determine the species' life history and ecological needs. Research should determine population structure, breeding, rearing, and feeding needs. They should also determine competition and predation interactions with other species of springsnails, and with other biota with which they share habitat.
  - 3.3 Prepare a report on the results of studies and research. Upon completion of studies and research designed to gather information on the life history and ecology of the species, reports will be prepared. Information from these reports will be incorporated into the recovery plan and the HMP.
4. Attempt establishment of a second population of each species within its likely historic range. Because the Alamosa and Socorro springsnails are found only in site-specific locations, they are susceptible to extinction should a natural or human-caused event occur that alters the springsnails' habitats. The possibility of such an event could be minimized if additional populations were established in different locations. Delisting is based on successful completion of this objective.
    - 4.1 Locate potential reintroduction sites. A review of all information concerning the location of springs that could provide habitat suitable for the Alamosa and Socorro springsnails should be conducted. Emphasis should be placed on springs that occur on public lands, both State and Federal. After potential introduction sites are located, they should be visited to determine habitat suitability.
    - 4.2 Determine endemic fauna of possible reintroduction sites. Introduction of the Alamosa and Socorro springsnails to sites not currently occupied should not threaten the continued existence of the endemic fauna that exists in potential reintroduction sites. All sites should be surveyed carefully to determine presence of any endemic fauna; if present, studies should be conducted to ensure that stocking of the springsnails will not jeopardize the continued existence of endemic fauna that occurs in areas proposed for reintroduction.



- 4.3 Select sites where introduction of the soringsnails will not jeopardize existing fauna. Following surveys of habitat and endemic fauna, all sites will be considered for reintroduction on a priority basis.
- 4.4 Transplant soringsnails into the selected sites. More than one potential transplant site may be selected. Potential sites could include both natural spring sites and places where exploratory drilling has resulting in striking thermal artesian water. Often these sites are capped; however, it may be possible to uncap selected systems and use the outfall to provide habitat for reintroduction sites.
- 4.5 Monitor transplanted populations. To determine the success of transplanted populations, populations should be monitored for at least 5 years following successful transplant from existing populations. Protocol discussed in Task 2 will be followed.

### III. IMPLEMENTATION SCHEDULE

The following Implementation Schedule outlines actions and estimates costs for the Alamosa and Socorro springsnails recovery program. It is a guide to meeting objectives elaborated in Part II of this plan. The schedule indicates recovery plan tasks, corresponding outline numbers, task priorities, duration of tasks ("ongoing" denotes a task that once begun should continue on an annual basis), which agencies are responsible for performing these tasks, and estimated cost for the various agencies involved. These actions, when accomplished, should result in the recovery of the Alamosa and Socorro springsnails and protect their habitat.

The Service is particularly interested in input from responsible agencies regarding their costs to implement the recovery tasks outlined in this draft version of the Alamosa Springsnail and Socorro Springsnail Recovery Plan.

#### Recovery Task Priorities

1. Priority 1 - An action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
2. Priority 2 - An action that must be taken to prevent a significant decline in species population/habitat quality, or some other significant negative impact short of extinction.
3. Priority 3 - All other actions necessary to provide for full recovery of the species.

#### Key to Acronyms Used in Implementation Schedule

G&F - New Mexico Department of Game and Fish

FWS - U.S. Fish and Wildlife Service (Region 2 is the responsible region)

ES - Ecological Services

RF - Refuges

ALAMOSA SPRINGSNAIL AND SOCORRO SPRINGSNAIL DRAFT RECOVERY PLAN IMPLEMENTATION SCHEDULE									
PRIORITY NUMBER	TASK NUMBER	TASK DESCRIPTION	TASK DURATION (YEARS)	RESPONSIBLE PARTY		COST ESTIMATES (\$000)			COMMENTS
				FWS REG. 2 PROGRAM	OTHER	YEAR1	YEAR2	YEAR3	
2	2.1	Obtain landowner permission to conduct monitoring	1	Es RF	G&F	1,000	—	—	
2	1.1	obtain concurrence to develop a habitat management plan	1	Es	G&F	—	—	—	Costs would be associated with Task2.1 above
2	1.3	Draft habii management plan	1	Es		4,000	—	—	Could be contracted
2	4.1	Locate potential transplant sites	1	ES	G&F	2,000	—	—	
2	4.2	Determine endemic fauna at transplant sites	1	Es	G&F	4,000	—	—	
2	1.2	Involve others in drafting and developing the management plan	1	ES		1,000	—	—	
2	1.4	Implement HMP	1	Es		1,000	—	—	
2	2.2	Establish a monitoring protocol and plan	1	Es	G&F	2,000	—	—	
2	2.3	Conduct monitoring	1	Es RF	G&F	2,000	2,006	2,000	
3	3.1	Prepare study/research plan	1	ES	G&F	4,000	—	—	
3	3.2	Conduct field and laboratory studies	3	Es	G&F	6,600	6,000	6,000	
3	3.3	Prepare a report	1	ES	G&F	—	—	4,000	Will be the responsibility of whoever does the research
3	4.3	Select sites for transplanted populations	ongoing	Es	G&F	2,000			
3	4.4	Transplant springsnails into selected sites	2	ES	G&F	1,000	1,000	—	
3	4.5	Monitor transplanted populations	ongoing	ES	G&F	2,000	2,000	2,000	Length of monitoring would depend upon success of transplants

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## Appendix A

### Public Review

Notice of availability of the draft recovery plan for review and comment was published in the Federal Register on March 17, 1994. A 60-day comment period was provided. On May 18, 1994, the comment period was extended until June 16, 1994. Review copies were sent to affected agencies, institutions, and individuals. Review copies were provided to other parties upon request. An asterisk (\*) indicates those parties who submitted comments on the draft plan. Additionally, notices announcing availability of the draft recovery plan were published in the following newspapers: Albuquerque Journal, Las Cruces Sun-News, Truth or Consequence Herald, and the Socorro Defensor Chieftain.

#### Copies Sent To:

Dr. Robert Hershler, Associate Curator, Mollusca, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Charles and Kenneth Sullivan, Bar A Ranch, Winston, New Mexico

\* Mr. Randy Coil, Monticello Irrigation District, Monticello, New Mexico

Mr. and Mrs. Earl Pound, Socorro, New Mexico

Mr. Terry Frest, Seattle, Washington

Ms. Cathy Pound, Socorro, New Mexico

Dr. Richard Smartt, Curator of Invertebrate Zoology and Ecology, New Mexico Museum of Natural History, Albuquerque, New Mexico

Dr. Pat Mehlhop, New Mexico Natural Heritage Program, Albuquerque, New Mexico

Dr. Artie Metcalf, Department of Biology, University of Texas at El Paso, El Paso, Texas

\* Dr. Robert Sullivan, Department of Biology, Texas A&I University, Kingsville, Texas

Mr. Bill Montoya, Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico

Mr. Jerry Landye, U.S. Fish and Wildlife Service, Pinetop, Arizona

Mr. Peter McKone, Freese and Nichols, Inc., Fort Worth, Texas

Mr. John England, U.S. Fish and Wildlife Service, Ecological Services, Salt Lake, Utah

Mr. Chris J. Ingram, Vice President, Geo-Marine, Inc., Baton Rouge, Louisiana

\* Mr. Theo E. Allwardt, Sr., Truth or Consequences, New Mexico

## Appendix B

### Comments Received

A total of three letters of comment were received on the draft Alamosa and Socorro springsnail recovery plan. All comment letters are reproduced in this appendix. Comments were thoroughly reviewed and considered. Responses to comments were dealt with in two ways: (1) editorial comments, corrections, or factual errors were incorporated directly into the the text of the plan; or (2) comments concerning plan content were addressed in specific responses, although similar comment8 were grouped together and answered as one. Specific Service responses are in the Appendix C, following the reproduced letters of comment. Numbers in the margins of the letters refer to the appropriate response or responses for that comment. Comment letters are arranged in the order they were received by the Service.



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PHONE 512/595-3803

Robert M. Sullivan  
Assistant Professor

Fowler \_\_\_\_\_  
 Donahoe \_\_\_\_\_  
 Bailey \_\_\_\_\_  
 Bristol \_\_\_\_\_  
~~Burton~~ \_\_\_\_\_  
 Connelley \_\_\_\_\_  
 Clay \_\_\_\_\_  
 Cully, A \_\_\_\_\_  
 Cully, B \_\_\_\_\_  
 Custer \_\_\_\_\_  
 Gault \_\_\_\_\_  
 Hooten \_\_\_\_\_  
 McCall \_\_\_\_\_  
 Quinn \_\_\_\_\_  
 S. \_\_\_\_\_  
 W. \_\_\_\_\_  
 File: \_\_\_\_\_

500-104

1. DISCLAIMER--pg i:

7       A.     2nd assumption should include ecologic considerations from both an aquatic and terrestrial perspective, particularly as each relates to other species of animals and plants in the immediate **area/microhabitat/macrophabitat.**

8       B.     3rd assumption must be based on some realistic estimate of the potential for dispersal (gene flow) in the species and/or dispersal agent(s).

9       c.     What realistic criteria constitutes an isolated/disjunct deme outside the contemporary area of potential disaster? Are not all populations subject to the vagaries of stochastic extinction, particularly in small populations? What is the minimum transplantable population size?

2. CURRENT STATUS--pg ii:

7       A.     Here the discussion of the current status of the Alamosa Springsnail should follow the explanation provided on page 4--until I read the 1st paragraph on page 4 I was a bit confused about the 5 sites (springheads) considerations from both an aquatic and terrestrial perspective, particularly, as each relates to other species of animals and plants in the immediate **area/microhabitat/macrophabitat.**

3. HABITAT REQUIREMENTS AND LIMITING FACTORS--pg ii:

7       A.     "lessen the quality of habitat available." I would emphasize the importance of both aquatic and terrestrial habitats here as previously mentioned above.

4. ACTIONS NEEDED--pg ii:

7       A.     Again, same suggestion as provided in CURRENT STATUS above concerning "Locate site and establish second populations....." --I was confused about the 5 sites.

5. INTRODUCTION--pg 1, 4th paragraph:

10       A.     **"The** recovery priority for these species is 14, indicating they:..... 2) face a low degree of threat,...." I read this statement as a contradiction to the 1st and 2nd paragraphs (1st sentences for each paragraphs) on THREATS (see pg 6)--may need to clarify here.

11       B.     I don't think you need two maps showing the same thing. I suggest **that** you inset a New Mexico state map and expand the featured map to include both species gross ranges--may **be a trivial point for this type of** document.



6. RECOVERY **STRATEGY**--pg 8 paragraph 4 and pg 10 SECTION 2.2:

7     A . ".....presumed historic range that have the physical,  
biologic, and ecologic attributes..."--Again, I think  
the biologic and ecologic components of both the  
aquatic and terrestrial habitats needs to be mentioned.

7. CONDUCT STUDIES AND RESEARCH IN BOTH THE FIELD AND **LABORATORY**-  
SECTION 3.2:

12     A. While I agree with the overall conceptual outline of  
the project, I am somewhat at a loss to comment on  
various questions and aspects of study design that come  
to mind, because of the lack of detail on specifics.  
For example, section 3.2 sounds to me like it could be  
a big job, depending on scope!

9     Also you might consider questions relating to genetic  
diversity and minimum populations sizes in a population  
genetic context here and elsewhere--I don't think you  
mentioned it in the proposal, it obviously is important  
in small populations subject to stochastic  
environmental affects.

8. SECTION **4.1**--pg 11

13     A. "A review of all information concerning the location of  
springs...."--**Will** this be a quantitative assessment or  
a qualitative assessment? If the former then this could  
add significantly to the workload!

RECEIVED  
USFWS-AFO  
6289  
JUN 16 '94

June 10, 1994

N.M. Ecological Services  
Albuquerque, N.M.

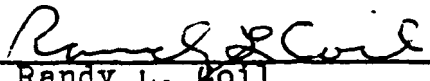
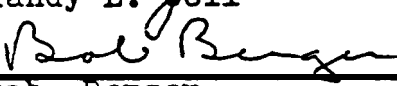
Gentlemen:

In reply to your letter and copy of  
your plan concerning the **snail-**

**The Monticello Community Ditch Association**  
are the owners of the property including  
the ujo **Caliente** Springs and all surrounding  
springs you propose to work. **this** water  
has allocated to us by the State **Engineer**  
of **new Mexico** for our purposes as an  
**acequia** of **New Mexico** for irrigation  
and the support of our custom and culture  
and to maintain our livelihood here in  
Monticello **Canyon**.

Therefor, **this is** to inform you that if  
you pursue the venture you will be  
tresspassing on private property and  
**therefor** will be subject to legal action.

monticello Ditch Commission

  
Randy L. Gail  
  
Bob Berger

Donahoo \_\_\_\_\_  
Bailey \_\_\_\_\_  
Bristol \_\_\_\_\_  
Burton 2 \_\_\_\_\_  
Cathey \_\_\_\_\_  
Cervantes \_\_\_\_\_  
Clayton \_\_\_\_\_  
Cully, A \_\_\_\_\_  
Cully, B \_\_\_\_\_  
Custer \_\_\_\_\_  
Etemadi-Moghani \_\_\_\_\_  
Gorreson \_\_\_\_\_  
Hansen \_\_\_\_\_  
Jahromi 19 \_\_\_\_\_  
Lovato \_\_\_\_\_  
Metzinger \_\_\_\_\_  
Mullins \_\_\_\_\_  
Orms \_\_\_\_\_  
Richardson \_\_\_\_\_  
Wilson \_\_\_\_\_  
Winckel \_\_\_\_\_  
File: 7402

USFWS-AFO  
5359  
MAY 18 '94

Donahoo 5/18/94  
Bailey \_\_\_\_\_  
Bristol \_\_\_\_\_  
Burton \_\_\_\_\_  
Cervantes \_\_\_\_\_  
Clayton \_\_\_\_\_  
Cully, A \_\_\_\_\_  
Cully, B \_\_\_\_\_  
Custer 5/24  
Garrison \_\_\_\_\_  
Hanson \_\_\_\_\_  
Mullins \_\_\_\_\_  
Orms \_\_\_\_\_  
Richardson \_\_\_\_\_  
Wilson \_\_\_\_\_  
File: 1402

1405 Tin Street  
Truth or Consequences, NM 87801  
May 16, 1994

New Mexico Ecological Services State Office  
3530 Pan American Highway NE  
Albuquerque, New Mexico 87107

Concerning: Draft recovery plan for Alamosa springsnail

I write as a member of the Monticello Community Ditch Association which owns the springs which this springsnail inhabits. I do not know if any of the commission members of the Association will send comment, especially since your published notice was easily overlooked and you did not immediately contact our Association about your proposed project. Since our Association is the landowner involved, it seems to me that you should have initiated contact, since, as your draft recovery plan states, cooperation by the landowner is essential.

My specific comment is: you admit that you know very little about this snail. Therefore, you do not know if it EVER existed in larger numbers than it does now or that it EVER existed in any other location. Therefore, how can you call for a "recovery"?

Furthermore, the Monticello Community Ditch Association has owned and cared for these springs for over 120 years - the livelihood of the members depends on the water flowing from these springs. Therefore, the Association has been very careful that nothing would degrade this water (as example, three years ago when the area was being considered for National Monument designation, it raised great objection for this very reason - increased public access to the springs would very likely have resulted in the springs being degraded by unthinking visitors who so often throw trash and litter anywhere - the Association successfully fought this intrusion by the Federal government because of concern for the protection of the springs),

It seems, therefore, that the Association has unknowingly provided for the well-being of this springsnail for all these years. YOU could not do better, because you have no life-involvement in the protection of the springs, while the members of our Association do.

In fact, you even propose something that could seriously jeopardize the springs when you suggest "uncapping" some other source of artesian thermal water to begin a second population of this springsnail. How can you be sure that letting that water flow will not lessen the water flowing from the present springs? As we in New Mexico know all too well, there is only so much water available above ground and underground. IF you begin a new spring, that water will have to come from a source which currently supplies an already flowing spring. Which spring will have less water flowing then? It could very likely be the springs owned and cared for by the Monticello Community Ditch Association, and you would be in effect destroying the very animal you propose to 'save' (as well as destroying a way of life that has existed in the Alamosa canyon for over 120 years) !

4 Furthermore, if you try to introduce this springsnail into some other already **flowing** hot springs, how can you **be** sure that you will **nt** upset the balance of nature there? Too many scientific judgments have backfired **with** tragic results when "exotic species" (**not** there by nature) **were** introduced into an environment to "**solve**" **some** problem!

Because of the above **it seems to me that** you should trust the Monticello Community Ditch Association **to continue to care** for its thermal **springs as it** has for the past **120** years, **for this** care has resulted in the **continued** existence of the **A 1** - springsnail **in** the numbers and **in** the area where **it currently exists, while you have no evidence that it ever was in** greater abundance or in any other area than at present.

Thank you for **considering my** comments.



Theo. E. Allwardt, Sr.

## Appendix C

### Responses to Comment5

1. The Monticello Community Ditch Association was sent a copy of the draft recovery plan on May 16, 1994. The Service received letters of comment from Mr. Randy Coil, Mr. Bob Berger, and Mr. Theo E. Allwardt, Sr., who are all members of the ditch association.
2. It is true that very little is known about the snails, including whether they ever existed in larger numbers than now, or if they ever existed in other locations. Because presently, they are known to exist only in extremely limited habitats and that, "recovery" for these species has to include the continued protection of these habitats.
3. The Service agrees that the Monticello Community Ditch Association has done an outstanding job of protecting and maintaining Alamosa Springs. We are fully aware that the livelihoods of the ranchers and irrigators depends upon the quality and quantity of water that the springs provide. It is not the Service's interest or desire to change the management or ownership of the springs. We are only interested in seeing the present management continue.
4. Uncapping of a thermal spring on public property for the purpose of providing a refuge site for the springsnails would only take place after studies were conducted to determine that the action would not impact the existing springs. The preferred action would be to introduce the species only into existing spring habitats on public lands. This would be done only after it is determined that no other species would be adversely impacted by the transplant.
5. The Service does trust the Monticello Community Ditch Association to continue to care for the thermal springs that are home to the Alamosa springsnail. We would, however, also like to offer our assistance to the Association should a situation arise that would jeopardize the quality and quantity of water from the springs. Under these circumstances, we would like to be a partner with the Association in protecting the springs.
6. The Service will not venture onto private property without the consent of the landowner.
7. Appropriate changes were made as suggested.
  - a. Gene flow amongst these species is presently, and probably was historically, extremely limited. This lack of gene flow has resulted in the high amount of endemism found among springsnails.
9. The Service agrees that all of these isolated, single, small populations are subject to extinction through natural stochastic events. The minimum transplantable population would have to be determined, perhaps only through scientific studies and experimental efforts.
10. The wording was changed on page 6 to remove the word "extremely," which gives the impression of a greater degree of threat than that faced by these species.
11. A revised map was prepared that combines the two maps presented in the review draft recovery plan into one map.
12. The Service agrees that it would take substantial efforts to conduct the studies and research described in the recovery plan. The specific components of these tasks would be developed when funding is made available to conduct them.

13. This would be a qualitative assessment, because only high quality sites that contain the physical features that would enhance potential success of a transplant would be considered.